

**REMARKS/ARGUMENTS**

Under a Request for Continued Examination Applicant submitted an amendment in Serial No. 09/751,231 dated August 27, 2003. Examiner responded to that amendment in an Office Action dated December 2, 2003. In that Office Action Examiner set forth grounds for rejection of application Serial No. 09/751,231 as follows:

(1) claims 1, 3-10, 19-49, 54, 56, and 81-84 stand rejected under 35 U.S.C. § 112, first paragraph, as containing new matter;

(2) claims 1, 3-10, 19-49, 54, 56, and 81-84 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement;

(3) claims 1, 3-10, 19-49, 54, 56, and 81-84 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention;

(4) claims 1-10, 19-33, 38-49, 54, 56, and 81-84 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,874,214 to Nova et al.;

(5) claims 1, 43, and 56 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,342,349 to Virtanen; and

(6) claims 1, 3-10, 19-49, 54, 56, and 81-84 were rejected under 35 U.S.C. § 103(a) as obvious over Nova et al. in view of U.S. Patent No. 5,922,617 to Wang.

In a telephonic interview held on January 21, 2004, between the Examiner and Applicant's attorney an agreement was reached as to the allowability of the claims of application Serial No. 09/751,231.

Applicant's attorney then submitted an amendment dated January 29, 2004 which reflected the agreement reached in the telephonic interview of January 21 and addressed all of the formality-based objections and rejections noted by Examiner.

In the Office Action of April 21, 2004, Examiner responded to Applicant's Amendment of January 29, 2004 as follows. Hereinafter, reference numerals shall correspond to the like-numbered paragraph of the Office Action of April 21 of Serial No. 09/751,231.

### *Status of Claims*

1. Applicant's amendment filed 01/29/04 is acknowledged and entered. Claims 1, 6-7, 9, 24, 54, 56 were amended by Applicants' response of January 29, 2004. The status of claims 55 and 57-58 are incorrectly denoted in the claim listing because these claims are withdrawn from further consideration as being drawn to *non-elected species*.

2. Claims 2 and 59-80 were cancelled by the amendment filed on 03/03/03.

3. Claims 1, 3-58 and 81-84 are pending.

4. Applicant has elected the following species for the elected invention (claims 1-49 and 54-58:

a. A species of condition is temperature.

### *Elections/ Restrictions*

5. Claims 11-18, 55, 57 and 58 are withdrawn from further consideration pursuant to 37 CFR § 1.142(b) as being drawn to *non-elected species*, there being no allowable generic linking claim. Election was made **without** traverse in Paper No. 7, filed 09/18/02.

6. Claims 50-53 are withdrawn from further consideration pursuant to 37 CFR § 1.142(b), as being drawn to a *non-elected invention*, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7, filed 09/18/02.

7. A complete response to the final rejection must include cancellation of non-elected claims 50-53 or other appropriate action (37 CFR § 1.144). See MPEP § 821.01.

***Drawings***

8. The substituted formal drawings received on 07/31/03 that replaces figures 2A and 2B of the original drawings files 12/29/00 are acceptable.

9. Claims 1, 3-10, 19-49, 54, 56 and 81-84 are treated on the merits in this Office Action.

***Withdrawn Objections and/or Rejections***

10. In view of Applicant's amendments of claims 1 and 56, the previous rejection under 35 USC § 112, first paragraph (written description) has been withdrawn.

11. In view of Applicant's amendments of claims 1, 6-7, 24, 54 and 56, the previous rejections under 35 USC § 112, second paragraph, have been withdrawn.

12. In view of Applicant's amendments of claims 1 and 56, the rejection of claims 1, 3-10, 19-49, 54, 56 and 81-84 under 35 USC § 102(b) as being anticipated by Nova et al. (US Patent No. 5,784,214) has been withdrawn.

13. In view of Applicant's amendments of claims 1 and 56, the rejection of claims 1, 3-10, 19-33, 38-49, 54, 56 and 81-84 under 35 USC § 103(a) as being unpatentable over Nova et al. (US Patent No. 5,784,214) and of Wang et al. (US Patent No. 5,922,617) has been withdrawn.

However, the Office Action of April 21 cited both *Maintained Rejections* and *New Rejections Necessitated by Amendment*.

***Maintained Rejections***

***Claim Rejections – 35 USC § 112/Response to Arguments***

15. Claims 1, 3-10, 19-49, 54, 56 and 81-84 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (This is a new matter rejection.)

Examiner argues that the recitation of “the device is exposed to a condition and removed from the condition.” claimed in claims 1, 3, 54 and 56 has no clear support in the specification and claims as originally filed.

16. In response to Applicant’s arguments, Examiner argues that the amendments of claims 1, 54 and 56 do not address the issue of support for the recitation of “the device is exposed to a condition and removed from the condition.” claimed in claims 1, 54 and 56. Because Applicants did not show where such limitation has clear support in the specification, the rejection under 35 U.S.C. § 112, first paragraph (new matter) is maintained.

***New Rejections – Necessitated by Amendment***

***Claim Rejections – 35 USC § 112***

18. Claims 1, 3-10, 19-49, 54, 56 and 81-84 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (This is a new matter rejection.)

Examiner argues that the recitation of “a surface comprises a probe region and an indicator region” claimed in claims 1, 54 and 56 has no clear support in the specification and claims as originally filed.

***Claim Rejections – 35 USC § 102***

20. Claims 54 and 56 are rejected under 35 U.S.C. § 102(b) as being anticipated by Cargill et al (US Patent No. 5,770,455). Examiner argues that the identifier tag of Cargill is equivalent to the integrated indicator of the present invention.

21. Claim 56 is rejected under 35 U.S.C. § 102(b) as being anticipated by Bioarray Solutions LLC (“Bioarray”) (WO 98/53093). Examiner argues that the libraries of beads of Bioarray comprise beads (substrate), color codes (integrated indicator) and compounds (molecular moieties), and that the color codes contain information of events that occur with the compounds, and thus Bioarray anticipates the presently claimed device.

***Claim Rejections – 35 USC § 103***

24. Claims 1, 3-10, 19-37 and 47-49 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cargill et al (US Patent No. 5,770,455) and Wang et al (US Patent No. 5,922,617). Although Examiner admits that the device of Cargill et al. does not expressly disclose a plurality of different molecular probes on the surface of a substrate, she takes the position that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a plurality of different molecular probes on the surface of a substrate as taught by Wang et al. for the device of Cargill et al.

***Remarks/Arguments***

1. Applicant notes and confirms the ***Status of Claims*** as set forth in paragraphs 1-4 above.

2. Applicant notes and confirms the ***Election/Restrictions*** as set forth in paragraphs 5-7 above. As noted in paragraph 7 above, the following claims have been withdrawn from further consideration in the subject application, i.e., claims 11-18, 50-53, 55, 57 and 58.

3. Applicant notes with gratitude Examiner’s acceptance of the substituted formal drawings received on 07/31/03 as set forth in paragraph 8 above.

4. Applicant confirms and notes with gratitude the *Withdrawn Objections and/or Rejections* by Examiner as follows:

- a. The previous rejection under 35 USC § 112, first paragraph, has been withdrawn in view of applicant's amendments to claims 1 and 56 (paragraph 10).
- b. The previous rejections under 35 USC § 112, second paragraph, have been withdrawn in view of applicant's amendments to claims 1, 6-7, 9, 24, 54 and 56 (paragraph 11).
- c. The previous rejections of claims 1, 3-10, 19-33, 38-49, 54, 56 and 81-84 under 35 USC § 102(b) as being anticipated by Nova et al. (US Patent No. 5,874,214), have been withdrawn in view of applicant's amendments of claims 1 and 56 (paragraph 12).
- d. The previous rejections of claims 1, 3-10, 19-49, 54, 56 and 81-84 under 35 USC § 103(a) as being unpatentable over Nova et al. (US Patent No. 5,874,214) and of Wang et al. (US Patent No. 5,922,617), have been withdrawn in view of applicant's amendments of claims 1 and 56 (paragraph 13).

Applicant responds to the *Maintained Rejections* as follows.

5. Under *Claim Rejections – 35 USC § 112*, Examiner argues that the recitation of “the device is exposed to a condition and removed from the condition.” claimed in claims 1, 3, 54 and 56 has no clear support in the specification and claims as originally filed.

The placement of the indicator in relation to the probe is to assure that it experiences what the probe experiences and that it provides a signal that is a lasting record of what the probe experiences.

There is no intention to separate the indicator from the substrate, but rather to remove the device from the condition. The device can then be placed in another environment different from the condition, such as a reader/detector that detects the signal from an indicator on the device.

Ample support for this position is found in the application (All references to page and line numbers are to the originally-filed application). For example, on page 7, lines 17-19 “FIGS. 1A, 1B, and 1C, collectively referred to as FIG. 1, schematically illustrate a device of the present

invention comprising a substrate in the form of a single disk having molecular probes and an integrated indicator attached to a top surface of the disk" (emphasis added).

FIGS. 2A, 2B 2C and 2D are discussed on page 7, lines 23-26 as follows: "...the substrate comprises a cartridge containing a magnetic disk and having an exterior surface formed by a well plate having an array of integrated indicators thereon and molecular moieties attached to an interior surface of each well of the well plate."

In a discussion of Figures 3A, 3B and 3C on page 8, lines 3-4 see "FIG. 3A shows the top view of the slide having probes and integrated indicators attached thereto...."

In a further discussion of Figure 1 on page 19, it is stated at lines4-5 "Attached to exterior surface 15 is a plurality of different molecular probes 21 in the form of an array;" and at lines17-18 "Also shown on surface 15 is an integrated indicator 20 that exhibits a response after exposure to a condition to which the disk 13 may be exposed."

Also see page 20, lines 21-23, "In another embodiment, the invention pertains to a device comprising a substrate having a plurality of molecular probes attached to a surface thereof and a plurality of different integrated indicators."

The embodiment of FIG. 3 is also discussed on pages 23: at lines 23-24, "Attached to exterior surface 15 is a plurality of nucleotidic molecular probes 21 in the form of an array, and lines 27-30 ".While only one indicator is required for this embodiment, an array of integrated indicators 20 is shown provided on exterior surface 15 of the slide 13. As shown, the indicators 20 are also placed in a rectilinear array, wherein each indicator is located adjacent to a probe."

Because the integrated indicator is attached to the substrate of the device, to remove the indicator from the condition is to remove the device from the condition, and the above references show that there is clear support in the specification for the claimed subject matter.

Applicant responds to Examiner's apparent assertion that the action of *removal from the condition* is not described by noting that the specification *describes removal as well as the motivation for removal from the condition*. In paragraph 61 of the specification (as published in 2002/0086294), the last sentence states "The indicator response is detectable after removing the indicator from the condition." One specific example where the environment for establishing the condition and the reading of the signal are distinct is in paragraphs 69 to 80 which describe the use of the melting temperature for oligonucleotides as an indicator of the hybridization

temperature. The device is placed in a hybridization chamber where the indicator is set to a “lasting value” and the subsequent detection of this signal associated with the hybridization temperature is detected when the device is placed in an Axon reader after it has been removed from the hybridization chamber and the hybridization is complete. It would be well understood by one of skill in the art that a hybridization chamber and an Axon reader are not the same place.

The *maintained claim rejection under 35 USC § 112* is respectfully traversed.

*New rejections – Necessitated by Amendment*

6. Examiner lodged a *Claim Rejection under 35 USC § 112*, first paragraph, against Claims 1, 3-10, 19-49, 54, 56 and 81-84. Examiner relies on the definition of “discrete” (see below) to conclude that there is no clear support in the specification and claims as originally filed for the recitation of “a surface comprises a probe region and an indicator region” as claimed in amended claims 1, 54 and 56.

The term "discrete" is typically used herein in its ordinary sense and refers to a region of a substrate that constitutes a separate or distinct part with respect to another region of the substrate. Thus, one discrete region of a substrate such as the interior region is readily distinguishable from another region such as the surface.

Examiner’s position is certainly not clear. Applicant’s definition of “discrete” is not saying that the substrate has only two discrete areas, i.e., the interior region and the surface. The use of substrate is merely an example chosen by Applicant to help the reader understand the meaning of “discrete.” Applicant could just as easily have said, “Thus, one discrete region of a substrate such as the probe region is readily distinguishable from another region such as the indicator region.”

Because a probe region can be separate and discrete from an indicator region, i.e., a probe does not sit in the same space as an indicator, the meaning of Applicant’s recitation in claims 1, 54 and 56 is abundantly clear and has clear support in the specification. Examples of discrete regions for the probes and indicators are also seen in the figures.

The *new claim rejection necessitated by amendment, under 35 USC § 112*, first paragraph is respectfully traversed.



***Claim rejections- 35 USC §.102***

7. Claims 54 and 56 are rejected under 35 U.S.C. § 102(b) as being anticipated by Cargill et al (US Patent No. 5,770,455). Examiner argues that the identifier tag of Cargill et al. is equivalent to the integrated indicator of the present invention. The identifier tag of Cargill et al. is simply a means to identify a sample whether it is by bar code, a unique “fingerprint” or other means. The identifier tag of Cargill et al. does not change in response to the experimental conditions experienced by the probes. Unlike the device of the present invention, in which the desired reaction is that the indicator experience what the probe experiences, Cargill et al. teaches away from the teachings of the present invention since it is clearly desirable for the identifier tag to be unaffected by the chemical reagents it is exposed to during library synthesis. Examiner directs Applicant to a passage in Cargill et al. beginning at col. 9, line 64 and ending at col.10, line 8.

However, at the bottom of the same paragraph relied on by Examiner, Cargill et al. goes on to say, “Preferably, the identifier tag is impervious to the chemical reagents used to synthesize the library (col.10, lines 14-16).

The color code in Cargill is erroneously equated to the integrated indicator of the present invention. The color code is clearly stated by Cargill to be a means of identification. It does not change during the course of exposure to the condition, and in fact, it would be undesirable for it to do so; the identity of the object it was bound to would be lost.

The Examiner also asserts in paragraph 20 of the office action that the identifier tag could contain information about transformation events such as changes in temperature. She cites col. 12, lines 14-45 and col. 14, lines 37-52. The col. 12 reference merely describes transformation events and never implies this information, let alone temperature data, be added to the identifier tag. The col. 14 reference described a process where the *identifier tags are pre-encoded and remain unchanged throughout the synthesis process*. This does not describe an indicator region on the device with a detectable response to the condition like that of the present invention that is changed by exposure to the same environment as a probe.

The *claim rejections under 35 USC § 102(b)* of claims 54 and 56 as being anticipated by Cargill et al (US Patent No. 5,770,455) are respectfully traversed.

8. Claim 56 is rejected under 35 U.S.C. § 102(b) as being anticipated by Bioarray Solutions LLC ("Bioarray") (WO 98/53093). Examiner argues that the bead of Bioarray comprises different areas in which the color codes and compounds are attached. She equates this to the probe region and the indicator regions of claim 56. However, in the device of the present invention, the desired reaction is that the indicator experience what the probe experiences. In Bioarray, the color coding is provided for purposes of identification, not for the purpose of monitoring probe activity as provided in Applicant's invention. . The color codes of the beads do not contain information related to events. The independent claims of Bioarray recite only "methods of identifying" or "apparatus for identifying." For the reasons set forth above, Applicant believes that claim 56 is not anticipated by Bioarray.

The *claim rejection under 35 USC § 102(b)* of claim 56 as being anticipated by Bioarray Solutions LLC ("Bioarray") (WO 98/53093) is respectfully traversed

9. Claims 1, 3-10, 19-37 and 47-49 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cargill et al (US Patent No. 5,770,455) and Wang et al (US Patent No. 5,922,617). Cargill et al. is inapplicable to the above claims rejected under 35 U.S.C. § 103(a) for the same reasons that it was inapplicable to claims 54 and 56 under 35 USC § 102(b) as stated above. Accordingly Cargill et al cannot be combined with Wang et al. to reject claims 1, 3-10, 19-37 and 47-49.

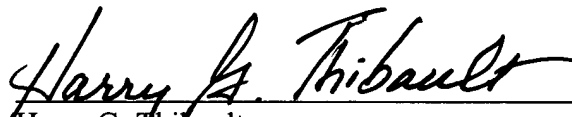
The *claim rejection under 35 USC § 103(a)* of Claims 1, 3-10, 19-37 and 47-49 as being unpatentable over Cargill et al (US Patent No. 5,770,455) and Wang et al (US Patent No. 5,922,617) is respectfully traversed.

CONCLUSION

For all of the above reasons, it is submitted that the pending claims define an invention that is patentable over the art. As the application should now be in condition for allowance, a prompt indication to that effect would be appreciated.

Respectfully submitted,

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